

CLAIMS

We claim:

- 1 1. An electronic event recorder for monitoring
2 vehicles, comprising:
 - 3 sensor means for sensing the occurrence of an
4 event;
 - 5 a memory for storing signature data related to a
6 vehicle;
 - 7 at least one of a transmitter and receiver, said
8 transmitter for transmitting said signature data upon
9 the occurrence of an event detected by said sensor
10 means,
 - 11 said receiver for receiving data from a remote
12 transmitter; and
 - 13 a microprocessor for controlling said sensor
14 means, said memory, said transmitter and said receiver,
15 wherein upon the occurrence of an event sensed by said
16 sensor means, said microprocessor causes said
17 transmitter to transmit said signature data to a remote
18 receiver.
- 1 2. An electronic event recorder for monitoring
2 vehicles as recited in claim 1 wherein said signature
3 data is encrypted.
- 1 3. An electronic event recorder for monitoring
2 vehicles as recited in claim 1 wherein said sensor
3 means detects an interrogation signal received by said
4 receiver from the remote transmitter.

1 4. An electronic event recorder for monitoring vehicles
2 as recited in claim 3 wherein said remote transmitter
3 resides in a roadside monitoring station.

1 5. An electronic event recorder for monitoring vehicles
2 as recited in claim 3 wherein said signature data
3 comprises at least one of vehicle registration, licence
4 plate number, vehicle cargo, vehicle weight, vehicle
5 size, vehicle speed data, vehicle exterior light status
6 data, and weather data.

1 6. An electronic event recorder for monitoring
2 vehicles as recited in claim 1 wherein said sensor
3 means comprises a collision sensor for sensing a
4 collision with another vehicle, said receiver for
5 receiving signature data from said other vehicle for
6 storing in said memory.

1 7. An electronic event recorder for monitoring vehicles
2 as recited in claim 6 wherein said signature data
3 comprises at least one of vehicle registration, licence
4 plate number, vehicle cargo, vehicle weight, vehicle
5 size, vehicle speed data, vehicle exterior light status
6 data, and weather data.

1 8. An electronic event recorder for monitoring
2 vehicles as recited in claim 6 wherein said sensor
3 means comprises acceleration and deceleration sensors
4 wherein a sensed acceleration or deceleration exceeding
5 a threshold value indicates a collision.

1 9. An electronic event recorder for monitoring
2 vehicles as recited in claim 1 wherein said event
3 recorder is integrated onto a smart card.

1 10. An electronic event recorder for monitoring
2 vehicles as recited in claim 9 wherein smart card is
3 housed in a housing which evidences tampering.

1 11. An electronic event recorder for monitoring
2 vehicles as recited in claim 1 further comprising a
3 clock, wherein said microprocessor causes said
4 transmitter to transmit said signature data at a time
5 interval determined by said clock.

1 12. An electronic event recorder for monitoring
2 vehicles as recited in claim 1 wherein said sensor
3 means detects at least one of tampering of the event
4 recorder, tampering with a vehicle locking mechanism;
5 and tampering of vehicle cargo.

1 13. An electronic event recorder for monitoring
2 vehicles as recited in claim 1 wherein said sensor
3 means comprises a speed sensor for sensing vehicle
4 speed.

1 14.. A system for monitoring vehicles, comprising:
2 a first event recorder carried by a first vehicle;
3 a second event recorder carried by one of a second
4 vehicle and a roadside monitoring station;
5 said first event recorder comprising:
6 a first event sensor means for sensing
7 an event;

1 a first memory for storing vehicle
2 signature data; and
3 a first transceiver for transmitting
4 vehicle signature data to, and receiving
5 signature data from, said second event
6 recorder;
7 said second event recorder comprising:
8 a second memory for storing vehicle
9 signature data; and
10 a second transceiver for transmitting
11 data to, and receiving vehicle signature data
12 from, said first event recorder,
13 wherein when said first event sensor means senses
14 an event, said first event recorder transmits its
15 vehicle signature data stored in said first memory to
16 said second transceiver in said second event recorder
17 to be stored in said second memory.

1 15. A system for monitoring vehicles as recited in
2 claim 14 wherein said first sensor means detects an
3 interrogation signal from said second event recorder
4 residing in said roadside monitoring station.

1 16. A system for monitoring vehicles as recited in
2 claim 14 wherein said second event recorder further
3 comprises a second sensor means,
4 wherein said first sensor means and said second
5 sensor means comprise collision sensors for sensing a
6 collision with another vehicle wherein said second
7 event recorder transmits vehicle signature data stored
8 in said second memory to said first transceiver in said
9 first event recorder to be stored in said first memory.

- 1 17. A system for monitoring vehicles as recited in
2 claim 14 wherein said signature data comprises at least
3 one of vehicle registration, licence plate number,
4 vehicle cargo, vehicle weight, vehicle size, vehicle
5 speed data, vehicle exterior light status data, and
6 weather data.
- 1 18. A system for monitoring vehicles as recited in
2 claim 14 wherein said first event recorder and said
3 second event recorder are integrated on smart cards.
- 1 19. A system for monitoring vehicles as recited in
2 claim 18 wherein said smart cards are housed in
3 housings which are tamper evident.
- 1 20. A system for monitoring vehicles as recited in
2 claim 19 wherein tampering with said housing disables a
3 monitored vehicle.
- 1 21. A method for exchanging vehicle signature data upon
2 the occurrence of an event, comprising the steps of:
3 detecting an interrogation signal from a remote
4 station;
5 transmitting first vehicle signature data if said
6 interrogation signal is detected to said remote
7 station;
8 detecting one of an acceleration and deceleration
9 exceeding a threshold value indicating a collision has
10 occurred with a second vehicle and, if a collision has
11 occurred:
12 transmitting said first vehicle signature

1 data to be stored in a memory in said second
2 vehicle; and

3 transmitting second vehicle signature data to
4 be stored in a memory in said first vehicle.

1 22. A method for exchanging vehicle signature data upon
2 the occurrence of an event as recited in claim 21
3 wherein said first vehicle signature data and said
4 second vehicle signature data comprises at least one of
5 registration data, licence plate number, cargo data,
6 weight data, and vehicle size data, vehicle speed data,
7 vehicle exterior light status data, and weather data.

1 23. A method for exchanging vehicle signature data upon
2 the occurrence of an event as recited in claim 21
3 wherein at least one of said interrogation signal, said
4 first vehicle signature data and said second vehicle
5 signature data are encrypted.

1 24. A method for exchanging vehicle signature data upon
2 the occurrence of an event as recited in claim 21
3 wherein said remote station is a roadside station
4 positioned at an intersection and further comprises the
5 step of receiving and storing a traffic light status
6 transmitted by said remote station at time of
7 collision.

1 25. A event recorder system for monitoring cargo in a
2 vehicle, comprising:

3 a memory for storing cargo data;

4 a transmitter;

5 a sensor for detecting when said event recorder is

- 1 locked in the vehicle and prompting said transmitter to
2 broadcast said cargo data at a time interval.
- 1 26. A event recorder system for monitoring cargo in a
2 vehicle as recited in claim 25 wherein said cargo data
3 is encrypted.
- 1 27. A event recorder system for monitoring cargo in a
2 vehicle as recited in claim 25, further comprising:
3 a receiver for prompting said transmitter to
4 broadcast said cargo data upon reception of an external
5 interrogation signal.
- 1 28. A event recorder system for monitoring cargo in a
2 vehicle as recited in claim 27 further comprising radio
3 frequency tags attached to the cargo, said receiver
4 receiving said cargo data from said radio frequency
5 tags.
- 1 29. A event recorder system for monitoring cargo in a
2 vehicle as recited in claim 28 wherein said transmitter
3 is disabled if one of said event recorder, the cargo,
4 or a vehicle locking mechanism are tampered with.
- 1 30. A event recorder system for monitoring cargo in a
2 vehicle as recited in claim 25 wherein said cargo data
3 comprises at least one of cargo weight, hazard level of
4 cargo, date of loading said cargo, loading location,
5 and shipping location.
- 1 31. A method for monitoring cargo carried in vehicles,
2 comprising the steps of:

1 inputting cargo data to a memory of an event
2 recorder;
3 locking said event recorder with said cargo in
4 said vehicle;
5 detecting said locking step; and
6 transmitting said cargo data upon one of a time
7 interval and an external interrogation signal.

1 32. A method for monitoring cargo carried in vehicles
2 as recited in claim 31, further comprising the step of
3 encrypting said cargo data.

1 33. An electronic method for monitoring a vehicle,
2 comprising the steps of:
3 sensing the occurrence of an event;
4 storing in a memory signature data related to the
5 vehicle;
6 transmitting said signature data upon the
7 occurrence of the event detected in said sensing step;
8 and
9 controlling with a microprocessor said sensor
10 means, said memory, and said transmitter, wherein upon
11 the occurrence of the event, said microprocessor causes
12 said transceiver to transmit said signature data to a
13 remote receiver.